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AUTHOR Lafleur, Brenda
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ABSTRACT

This publication presents the results of a study undertaken to measure the economic costs of students who drop out of secondary school in Canada and summarizes the social and economic costs of dropping out. The primary objectives of the report are to raise awareness of these costs among the business community and to motivate all stakeholders to invest in the labor force of the future. The economic prosperity of the nation as a whole, employment rates, and the climbing dropout rate in Canada during the 1980s, when over one-third of Canada's youths were not graduating from secondary school, are considered in terms of education's importance. The myth of the over-educated Canadian is also discussed. The cost to Canadian society over the working lifetime of the nearly 137,000 secondary school dropouts who should have graduated in 1989 is $4 billion in present-value terms. Each individual male dropout will lose nearly $129,000 in today's dollars over his working lifetime, while the female dropout forfeits $107,000. As an investment vehicle, education has a higher rate of return than almost any alternative investment project. The rate of return to society of investing in secondary school education is 19.0 percent for males and 17.8 percent for females. Canada could save $26 billion if the dropout rate was reduced from 34 percent to 10 percent by the year 2000. Any initiative that encourages students to complete secondary school can have a major positive impact on the future economic well-being and prosperity of both the individual student and Canada as a whole. Includes 15 notes and 14 charts/exhibits/tables. (JB)

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DROPPING OUT: THE COST TO CANADA

BY BRENDA LAFLEUR

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HIGHLIGHTS

Canada will lose more than $4 billion in present-value terms over the working lifetimes of the nearly 137,000 youths who dropped out of secondary school instead of graduating with the class of 1989.

Each individual male dropout will lose nearly $129,000 in today's dollars over his working lifetime, while the female dropout forfeits $107,000.

As an investment vehicle, education has a higher rate of return than almost any alternative investment project. The rate of return to society of investing in secondary school education is 19.0 per cent for males and 17.8 per cent for females.

Canada could save $26 billion if the dropout rate were reduced from 34 per cent to 10 per cent by the year 2000.

REPORT 83-92-E

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The Custom Economic Services Group is a research division at The Conference Board of Canada. The Group's purpose is to address the specific information requirements of the Conference Board's Associates by conducting financed research. Services include customized economic forecasting at the municipal, provincial, and national levels for periods up to 10 years; economic impact analysis; custom-tailored econometric models; consumer and business attitudes surveys; and analysis of the economic implications of changes in public policy.

Preface

This report discusses the findings of a major study undertaken to measure the economic costs of students dropping out of secondary school. The primary objective of the report is to raise awareness of these costs among stakeholders, particularly the business community, and motivate them to invest in the labour force of the future.

The Conference Board of Canada is grateful for the sponsorship received for this research from the Mobilization Component of the national Stay-in-School initiative delivered under the auspices of the Minister of State for Youth by Employment and Immigration Canada. This report was prepared by Brenda Lafleur, Senior Research Associate, under the direction of Marie Burrows, Director, Custom Economic Services.

The Conference Board wishes to acknowledge the co-operation and assistance of individuals in the Youth Affairs Branch, the Occupational Studies and Program Linkage Unit, and the Labour Market Outlook Unit of Employment and Immigration Canada. Appreciation is also extended to a panel of experts on education and labour economics who participated in a review of the research.

James R. Nininger
President and Chief Executive Officer
The Conference Board of Canada
March 1992

The Conference Board of Canada

A Conference Board of Canada report from the Custom Economic Services Group

Vice-President and Chief Economist, Economic Forecasting, Analysis and Product Development: James G. Frank
Director: Marie Burrows
Researchers: Brenda Lafleur, Steven Friedman
Business Development: John Higgins

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Dropping Out: The Cost to Canada

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The Costs of Dropping Out: Everyone Loses

The costs of dropping out of secondary school are discernible and significant. Canadian society will lose more than $4 billion over the working lifetimes of the nearly 137,000 youths who dropped out instead of graduating with the class of 1989. The $4 billion figure is the "present value" of the working lifetime cost of dropping out for the group of students who did not complete their secondary school education in 1989. For an explanation of the concept of present value, see Exhibit 1. The economic cost of $4 billion consists of lost earnings and unrealized tax revenues as well as the additional expenditures society has to make to address related social problems. This cost becomes even more staggering when we realize that the amount represents the lifetime loss to society of *only one school year of students who drop out*.

Individual students are also clearly harmed by their decision to drop out of school. Each individual male dropout loses nearly $129,000 in today's dollars over his working lifetime, while the female dropout forfeits $107,000. In concrete terms, what these lifetime losses cost the student right now can be represented by the graduating student receiving a cheque for more than $19,000 along with the diploma, while the dropout receives nothing. The $19,000 is the present value of lifetime loss due to dropping out for males and females.

As an investment vehicle, education has a higher rate of return than almost any alternative investment opportunity. The rate of return to society for investing in secondary school education is 19.0 per cent for males and 17.8 per cent for females. The rate of return for the individual student is even higher. The individual male student receives a rate of return of 65.4 per cent by graduating from secondary school, while the female student earns a 74.4 per cent return.

The Importance of Education

Canadians are increasingly aware that education is essential to our social well-being and economic prosperity; indeed, it is one of the most significant public issues facing Canada in the 1990s. It is no longer news that Canada's educational system has a vital role to play in our industrial competitiveness or that a growing gap between skilled and unskilled labour threatens to deepen the gulf between haves and have-nots.

At present, secondary school dropouts experience higher unemployment rates than their classmates who graduate. The critical link between education and employment is shown in Chart 1, in which the unemployment rate falls significantly as the level of education rises. The workers most likely to be laid off in times of economic recession are those in occupations where job growth is lowest—precisely those jobs that require lower skills. A Statistics Canada study indicates that the probability of permanent layoff was highest for those with lower levels of education, especially those who had not completed secondary school.[1]

The importance of education will not diminish in the future. Of all the new jobs to be created between 1990 and the year 2000, it is projected that 64.5 per cent will require a minimum of 12 years of

1 Statistics Canada. *Workers Experiencing Permanent Job Loss: A Survey of their Labour Market Experiences, 1981–84* (Ottawa: September 1986)

Exhibit 1

Calculating the Present Value

The concept of "present value" refers to how much a future benefit is worth in today's dollars. For example, if an individual is given the choice of receiving $50 today or $60 one year from today, the person must be able to compare the two options on an equal basis, either to have both in today's monetary value or both in the value one year hence. The present value concept uses the former; it calculates the value that a future benefit is worth today. In the above example, the value today of the $60 to be received one year from now can be calculated by discounting the amount by the current rate of interest. If the current rate of interest is 10 per cent, the present value of the $60 is $54.55 (i.e., 60/1.10). The person would thus choose to receive the $60 one year hence.

The general formula for estimating the present value of a stream of future benefits is:

$$V_n = \sum_{t=1}^{n} \frac{E_t}{(1+i)^t} \qquad (1)$$

In this formula, E_t is the benefit expected in year t, i is the discount rate, n is the working lifetime of the individual and V_n is the present value of the stream of future benefits. In the case of education, the expression E_t relates to the net benefits attributable to graduating from secondary school. Because there are costs associated with acquiring more education, these costs must be included in the above formula. Equation (1) then becomes:

$$V_n = \sum_{t=1}^{n} \frac{E_t}{(1+i)^t} - \sum_{t=1}^{n} \frac{C_t}{(1+i)^t} \qquad (2)$$

C_t represents the stream of costs associated with remaining in school. In effect, both society and the individual will continue to invest in education if the following relationship holds true:

$$\sum_{t=1}^{n} \frac{E_t}{(1+i)^t} > \sum_{t=1}^{n} \frac{C_t}{(1+i)^t} \qquad (3)$$

Equation 3 says that society will continue to spend on secondary school education and students will remain in school until graduation as long as the present value of the future benefit due to graduating outweighs the present value of the costs incurred to achieve that graduation diploma.

Calculating the Rate of Return

Calculation of a rate of return simply identifies the rate of interest, or discount rate, that equates the present value of the expected future benefits and the present value of the costs. The rate of return on secondary school education can be calculated by modifying Formula (3) slightly. It refers to the rate that equates the present value of the expected benefits attributable to graduating from secondary school to the cost of acquiring that diploma. This is illustrated as Equation (4)

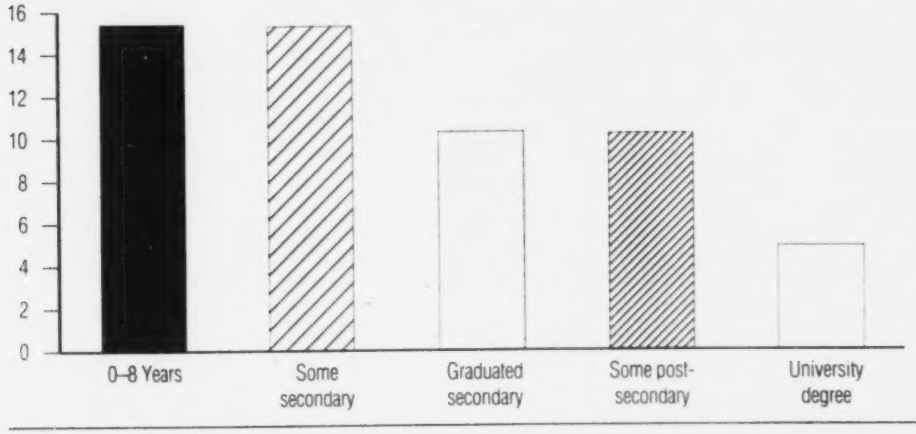
$$\sum_{t=1}^{n} \frac{E_t}{(1+i)^t} = \sum_{t=1}^{n} \frac{C_t}{(1+i)^t} \qquad (4)$$

education and training (see Chart 2). This is in marked contrast with the current situation, where only 53.3 per cent of jobs require at least 12 years of education.

We as Canadians feel that we have a highly educated workforce compared with those of many other countries. We may therefore be shocked to discover that over one-third of Canada's youths are not graduating from secondary school and that the numbers increased steadily during the mid to late 1980s. According to

Chart 1

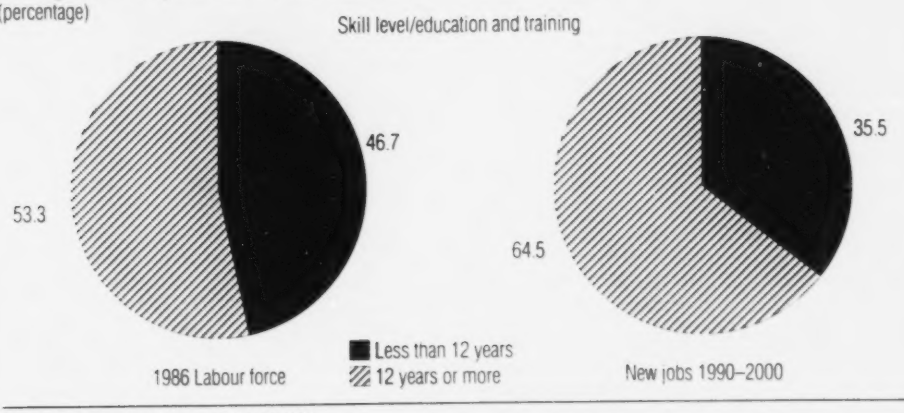
Unemployment Rate by Education Level, 1991
(percentage)



Source: Labour Force Survey, Statistics Canada.

Chart 2

Rising Skill Requirements, 1990–2000
(percentage)



Source: Employment and Immigration Canada, 1991.

Statistics Canada, the national secondary school dropout rate stood at over 34 per cent in the 1988–89 academic year (see Chart 3). This rate is substantially above that of countries such as the United States, Germany and Japan.

In the 1988–89 academic year, more than three out of every 10 secondary school students dropped out. This works out to be nearly 137,000 students who were enrolled in grade 9 in the 1985–86 academic year but failed to graduate by 1988–89. This number, reported by Statistics Canada, does not include those

dropouts who subsequently return to school to continue their education either full- or part-time. While it must be acknowledged that the inclusion of this drop-back-in factor would reduce the dropout rate reported by Statistics Canada, a survey conducted for the Ontario Ministry of Education reports that the success rate of "dropbacks" in Ontario is extremely low.[2] No official figures for dropbacks are available for Canada.

A continued national dropout rate of 30 per cent or more will have an increasingly negative impact on Canada's economic future. ▶

While the most recent dropout rate is below the 1979–80 peak of 38 per cent, the gains won in the mid-1980s—when the dropout rate was cut by over one-quarter to a low of 28 per cent cent in 1984—have been eroded.[3] There is significant disparity in the dropout rates among the provinces. The most recent evidence (see Chart 3) shows that Quebec suffers from the highest secondary school dropout rate, followed closely by Alberta, Ontario, British Columbia and Nova Scotia.

There is no single, magic solution to the dropout problem. Any attempt to focus on the causes and characteristics of the phenomenon or to propose solutions to the problem must address a range of complex issues.

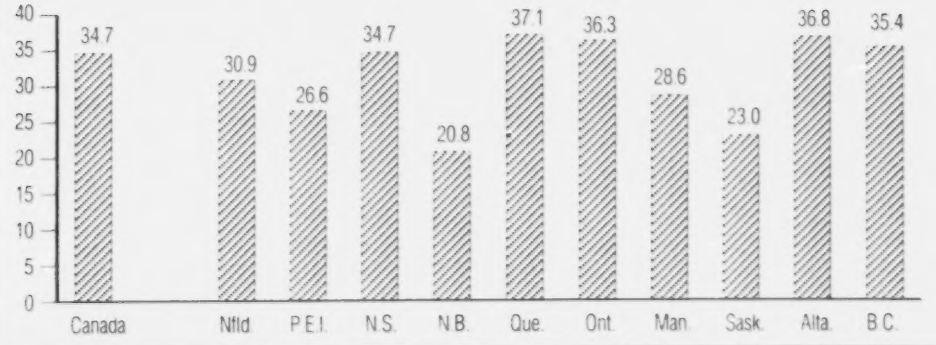
For a variety of reasons, including demographic shortages, growing competition from the academic systems of competitor nations, and the rising skill requirements of new and existing jobs, a continued national dropout rate of 30 per cent or more will have an increasingly negative impact on Canada's economic future. The bottom line is that the problems now facing the educational system threaten to reduce the national standard of living, heighten demands on social safety nets, and increase the economic burden on individual and corporate taxpayers.

It is obvious from the performance of the Canadian economy in the 1980s that the country was not using its human resources

Chart 3

Secondary School Dropout Rate, Canada and the Provinces, 1989*

(percentage)



* The date on the chart refers to the academic year 1988–89.
Source: Education, Culture and Tourism Division, Statistics Canada

2 Ellen Karp, *The Drop-Out Phenomenon in Ontario Secondary Schools: A Report to the Ontario Study of the Relevance of Education and the Issue of Dropouts* (Toronto: Ontario Ministry of Education, 1988), 194.

3 The 1978–79 academic year is the earliest period for which Statistics Canada has calculated consistent Canadian and provincial dropout rates.

to their full potential. High unemployment rates coexisted with skilled labour shortages; productivity growth, a key indicator of the trend in the standard of living, was sluggish; and real wages fell. The link between education and economic prosperity has been an object of intense concern to all stakeholders: the business community, educators, policy makers, labour, parents and students. All of these partners have a strong interest in ensuring that today's youth have the opportunity to become productive participants in Canada's future.

The Value of Investing in Education

A "human capital" approach views expenditure on education as a form of investment. ▶

The majority of studies undertaken since the late 1950s to estimate the economic returns to education have adopted what economists call a "human capital" approach, which views expenditure on education as a form of investment. The returns to this investment can be calculated for the individual student (private returns) or for the overall economy (social returns). In essence, the idea is that the individual student and society invest in education in the hope of gaining a future return on that investment. The human capital approach states that society will continue to fund education if the benefits of doing so outweigh the associated costs. Similarly, individual students will remain in school if they perceive the future benefits of the additional education to be greater than the related costs.

Just as graduation from secondary school can be viewed as an economic benefit to the student and to society, failure to graduate can be viewed as an economic cost. ▶

The benefits of graduating from secondary school and the costs of dropping out of school are two sides of the same economic coin. Just as graduation from secondary school can be viewed as an economic benefit to the student and to society, failure to graduate can be viewed as an economic cost (see Exhibit 2).

The social cost of dropping out of school takes two forms: on the one hand, the lower lifetime earnings of the dropout and the resulting lower tax revenue and, on the other hand, the variety of factors that have been claimed as social costs—in particular, increased administration costs of unemployment and welfare programs, increased demand on the health system, a less efficient operation of markets, and higher costs for crime prevention and detection. As has been noted by many researchers, the existence of these latter costs is implicitly one of the major arguments for programs that enhance the secondary school retention rate.

The loss to individual students who drop out of secondary school before graduation also comes in two forms—market-related and non-market-related. The former refers to the fact that the dropout can be expected to earn lower lifetime earnings compared with someone who graduates from secondary school. The latter refers to a host of factors that are less easily measured. These factors, collectively referred to as non-market costs, include decreased opportunities for mobility and training, the lower probability of actually finding work, lower returns on personal investment portfolios, the propensity to have less highly educated offspring, and a lower level of personal health and longevity.

Against these costs must be placed the savings that the dropout and the rest of society gain when education is cut short. For the individual student, the savings include the cost of books and miscellaneous fees that no longer have to be incurred. If employed, the dropout also benefits by earning income rather than attending school. The after-tax income benefit has to be reduced by the income that the person would have earned through summer and part-time work if he or she had continued to attend school. The savings to the rest of society that occur when students drop out of

Exhibit 2

Examples of Factors Associated with Dropping Out

Individual student	Rest of society
Market factors	
• lower lifetime after-tax earnings of dropout	• lower tax collections
• savings in costs to student associated with remaining in school - books, tuition - income forgone while attending school	• savings in costs to society to educate students to graduation - school board expenditures
Non-market factors	
• lower non-wage benefits at work - working conditions - status	• decreased participation in the electoral and political process
• lower level of personal health	• higher administration costs of social welfare programs
• decreased opportunity for mobility and training	• higher costs associated with crime prevention and detection
• decreased probability of finding a job	• decreased level of charitable giving
• lower return on investment portfolio	• decreased social cohesion
• less highly educated offspring	
• decreased financial security	
• decreased cultural enjoyment	

Source: The Conference Board of Canada

secondary school include lower expenditures on teacher's salaries, equipment and buildings.

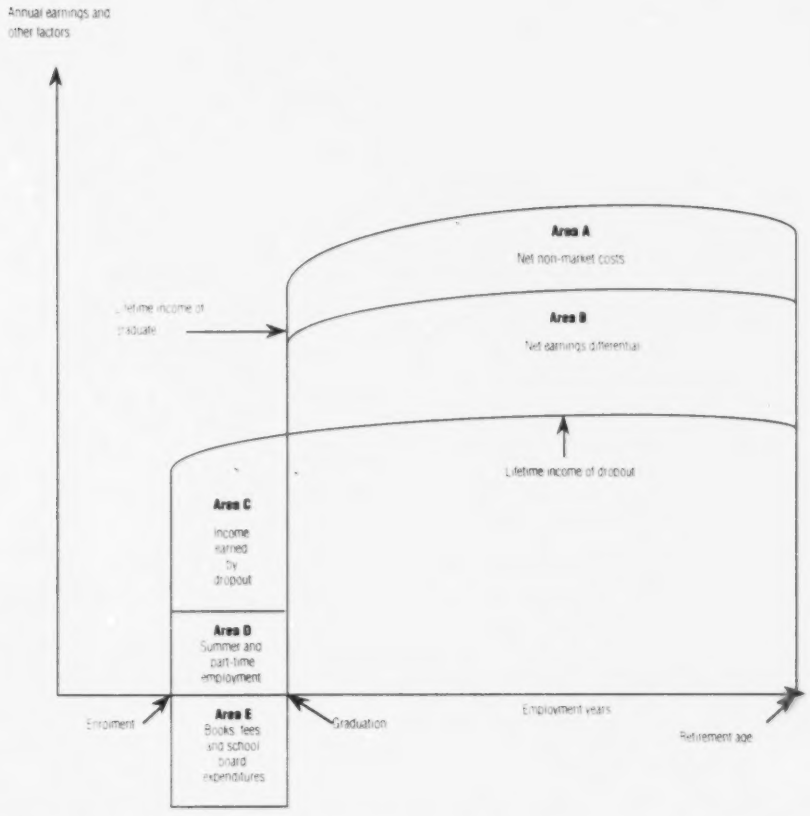
An illustration of the overall cost to Canada of dropping out is found in Exhibit 3. This shows that the dropout's lifetime earnings profile is below that of the graduate, illustrating the fact that, on average, a dropout will earn less money over time than a graduate. The area between the two earnings profiles, Area B, is the income-related cost to the student of dropping out. Non-market-related costs of dropping out, such as lower personal health or higher costs of administering social programs, are represented by Area A.

A dropout will earn less money over time than a graduate. ▶

On the savings side, Area C represents the income that the dropout earns while working rather than attending school. The value of these earnings is reduced by the value of part-time and summer employment, illustrated as Area D, that the dropout could have earned while attending school. The final group of savings is shown in Exhibit 3 as Area E. These are the expenditures that no longer have to be made by the student and the rest of society when a student drops out. They include school board expenditures on education as well as the student's personal expenditures on books, fees and other miscellaneous items. The total

Exhibit 3

Benefits and Costs of Dropping Out



Source: Adapted from Stager (1989) by The Conference Board of Canada

economic cost to Canada of students dropping out of secondary school can be illustrated by subtracting the value of areas C and E from the total value of areas A, B and D.

Dropping Out—The $4 Billion Loss for Canada

The cost to society over the working lifetime of the group of secondary school dropouts who should have graduated in 1989 is $4 billion in present-value terms. As noted previously, this $4 billion problem represents the lifetime loss to society of only one school year of students who did not complete their secondary education.

The most obvious cost included in the $4 billion figure is the income that the dropout forgoes by not obtaining a graduation diploma. Those forgone earnings represent lost economic production for society. Dropouts are less productive because of a shortage of learned skills; therefore, they contribute

Dropouts contribute less to society in terms of productive capacity and economic output. ▶

less to society in terms of productive capacity and economic output. This reduced national income results in lower tax collections for all levels of government.

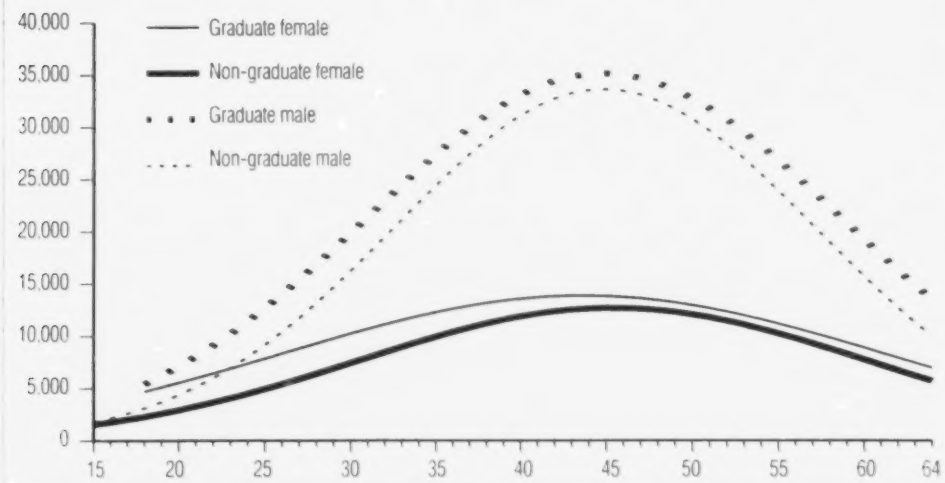
Using data from the 1986 census,[4] the age–income profiles of a typical secondary school graduate and a dropout were estimated (see Chart 4). The shape of the profiles reflects the fact that, on average, individuals earns less income at the beginning of the career and nearing retirement, on their sixty-fifth birthday. In the peak earning years, between 35 and 50 years of age, both the graduate and the dropout experience their highest earning potential. Chart 4 reveals that the income potential of dropouts is less than that of graduates at every age level.

To assume that the income difference between secondary school dropouts and graduates is solely a result of the diploma is unrealistic. It ignores the fact that the students may not be identical in innate ability and that socio-economic factors can also affect earning potential. Socio-economic characteristics include the parents' level of education, the family income level, labour market conditions, the geographical area in which the student resides and the characteristics of the school the student attends.

The influence of lower educational attainment on the earning differential must be disentangled from socio-economic influences. Since not all of the income differential between the secondary school dropout and graduate can be

Chart 4

Lifetime Pre-Tax Income Profile of Graduate & Non-Graduate, Canada
(1989 dollars)



Source: Statistics Canada, The Conference Board of Canada

4 The 1986 census detail made available by Statistics Canada is the most recent and the most complete data. Note that the 1986 Census of Canada conducted by Statistics Canada reflects income data for the 1985 calendar year. These figures were then adjusted for inflation to reflect 1989 dollars. The year 1989 was chosen because it is the most recent year for which complete information on dropout rates and the number of dropouts is available from Statistics Canada for Canada and the provinces.

attributed solely to dropping out, an adjustment based on a survey of other studies was included in this report. This explicitly recognizes that other factors play an important role in determining both the successful completion of secondary school and subsequent career success.

The strong relationship between dropping out and the cost to the student and the rest of society in the form of lost income and productive capacity has been well established. Beyond these income-related consequences, a host of social indicators, such as crime rates, health care costs, and social security payments, suggest that education plays an even larger role than traditional studies have indicated. A comprehensive study by Robert Haveman and Barbara Wolfe identified these factors and offered a procedure for estimating their value.[5] It concluded that standard estimates of the benefit of incremental schooling substantially understate the full value of educational investment on the part of the society and the individual student. They estimated that these non-market factors are equal in value to the market factors. Their procedure of equating the value of the non-market and market factors was adopted in this report.

The $2.7 billion cost to dropouts represents the lower after-tax income earned by a dropout and the loss in non-market-related benefits.

The $1.3 billion cost to the rest of society is composed of the loss of tax revenue, the extra public administrative costs related to crime and social welfare programs, and costs relating to a broad community-based "quality of life".

Dropping out has associated savings as well as costs. The major saving for the individual dropout is the value of the income generated by working full time instead of attending school. Even when adjustments are made to reflect part-time earnings during the school year and full-time earnings in the summer, the dropout earns more than the full-time student during that time period.

The major saving to the rest of society associated with students dropping out of secondary school is in the area of lower school board expenditures on salaries, supplies and buildings. The expenditures made by society to educate secondary school students are relatively high, because they are not offset to any great extent by tuition fees.

Exhibit 4 shows the components of the $4 billion lifetime cost to Canada of the 1989 year of dropouts. The $4 billion is the present value of the lifetime costs to Canada due to the group of students who entered Grade 9 in 1985–86 and failed to graduate from secondary school by 1988–89. It is composed of a $2.7 billion cost incurred by the dropouts themselves and a $1.3 billion cost that the rest of society incurs. The $2.7 billion cost to dropouts, *part* of the overall $4 billion figure, represents the lower after-tax income earned by a dropout compared with a graduate and the loss in the non-market-related benefits that accrue to graduates. This amount is both a private cost to the dropouts themselves and, since it represents lost economic activity and quality of life, part of the overall cost to Canada. The $1.3 billion cost to the rest of society is composed of the loss of tax revenue, the extra public administrative costs related to crime and social welfare programs, and costs relating to a broad community-based "quality of life". The last-named include the costs of decreased social cohesion, decreased participation in political issues, and lower educational attainment among offspring of secondary school dropouts.

The $4 billion includes both market and non-market factors. The estimated non-market costs shown in Exhibit 4 were obtained by first equating the value of the

5 Robert H. Haveman and Barbara L. Wolfe. "Schooling and Economic Well-Being: The Role of Non-Market Effects." *The Journal of Human Resources*, 19, no. 3 (1984): 377–407.

Exhibit 4

Estimated Working Lifetime Costs for the 1989 Year of Secondary School Dropouts
($ millions)

	Dropout	Rest of society	Total cost to Canada (Dropout + rest of society)
Market			
Lost lifetime after-tax earnings	$1,335		$1,335
Lost taxes		$1,697	$1,697
Savings in costs to students associated with remaining in school	–$156		–$156
Savings in costs to society to educate students to graduation		–$2,067	–$2,067
Non-market			
Lost private non-market benefits associated with graduation	$1,492		$1,492
Lost social non-market benefits associated with graduation		$1,738	$1,738
Total Costs	$2,671	$1,368	$4,039

Note: See Exhibit 2 for examples of market and non-market costs.
Source: The Conference Board of Canada

separate male and female non-market costs to their respective market costs. These amounts were then adjusted to reflect their present value and weighted by the number of male and female dropouts to obtain an overall non-market cost to Canada. These adjustments cause the value of the non-market costs to differ slightly from that of the market costs.

Students Lose by Dropping Out

Women continue to earn less than their male counterparts at all levels of educational attainment, but . . . ▶

The individual student loses by dropping out of secondary school. Exhibit 4 shows that the cost to the dropouts who should have graduated in 1989 is $2.7 billion. Each of the nearly 137,000 students from the class of 1989 who did not graduate forfeits over $19,000, in present-value terms, upon dropping out. This loss is made up of the present value of lifetime lost earnings as well as an estimated amount to reflect such non-market factors as the decreased opportunity for mobility and training and a reduced quality of life. In effect, this amounts to a large-scale underdevelopment of human resources.

When education is cut short, individuals earn less over their working lifetimes. In lost income alone, each individual loses approximately $70,000 in today's dollars on average over a working lifetime. Instead of earning $888,000, the male dropout will earn $812,000, while the female dropout will earn $385,000 rather than $448,000 (see Chart 5).

The fact that women forfeit less income

than men by dropping out of secondary school reflects the fact that women continue to earn less than their male counterparts at all levels of educational attainment. Indeed, as Chart 5 demonstrates, female graduates earn only 50 per cent of what male graduates earn over their working lifetimes. The difference is not wholly attributable to wage differentials. Women tend to experience more periods of unemployment and more work interruptions, due in part to childbearing and childrearing responsibilities. Yet there is greater economic incentive for females to complete secondary school than there is for males: in percentage terms, female graduates earn 16 per cent more than female dropouts, while male graduates earn 9 per cent more than male dropouts.

... female graduates earn 16 per cent more than female dropouts, while male graduates earn 9 per cent more than male dropouts. ▶

The future income that the dropout forfeits by not completing secondary school is partly counterbalanced by savings. The most obvious saving is the income earned by working full time instead of remaining in school. As noted previously, even when adjustments are made to reflect the part-time and summer employment of a full-time student, the full-time student earns less than the dropout during the period of secondary school attendance.

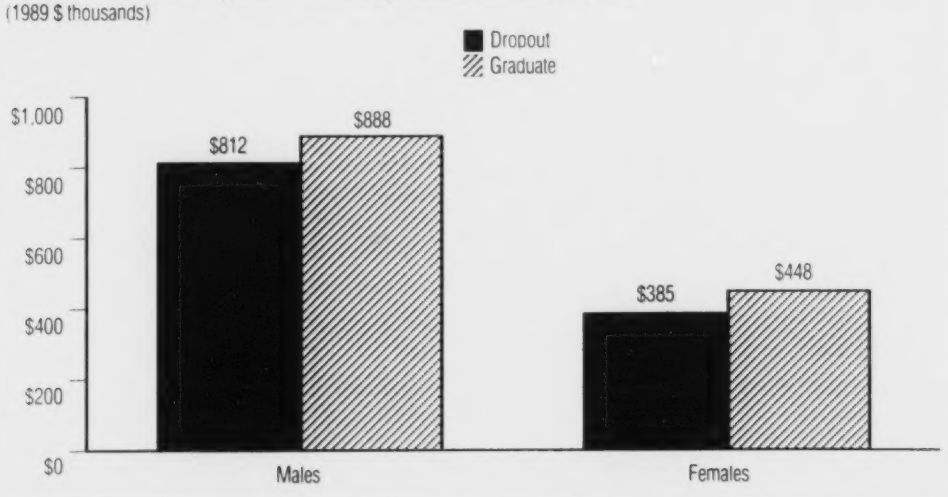
Other savings associated with leaving secondary school include the cost of textbooks, tuition (if the student attends private school), and other miscellaneous fees and charges. These expenditures are not onerous at the secondary school level, particularly when compared with the expenditures made by society to educate the secondary school student.

The non-discounted lifetime income accruing to graduates and dropouts by province is illustrated in Table 1. This table shows the cumulative current dollar value of the earnings of graduates and dropouts. From Table 1 we note that the lifetime income of a male graduate ranges from a high of $977,000 in Ontario to a low of $591,000 in Prince Edward Island. The

Chart 5

Estimated Private Lifetime Income by Education Level & Sex

(1989 $ thousands)



Source: Statistics Canada, The Conference Board of Canada

Table 1

Estimated Private Lifetime Income by Province and Education Level, Male and Female
(1989 $ thousands)

	Male			Female		
	Graduate	Non-graduate	Difference	Graduate	Non-graduate	Difference
Canada	888	812	76	448	385	63
Nfld.	731	537	194	274	251	23
P.E.I.	591	556	35	394	273	121
N.S.	821	665	156	347	324	23
N.B.	812	672	140	355	298	57
Que.	810	751	59	447	378	69
Ont.	977	895	82	476	410	66
Man.	906	748	158	455	362	93
Sask.	928	745	183	408	333	75
Alta.	974	848	126	464	414	50
B.C.	882	839	43	430	390	40

Source: Statistics Canada, The Conference Board of Canada

highest non-graduate income is earned in Ontario, while the lowest is earned in Newfoundland. As with the national average, the income of females is less in each province than that of males. In fact, in no province does the average female secondary school graduate earn as much as the male dropout. Provincial figures for female secondary school graduates show that the lifetime income ranged from a high of $476,000 earned in Ontario to a low of $274,000 in Newfoundland. For the female secondary school dropout, the highest income was earned in Alberta and the lowest again in Newfoundland.

Education Is an Investment

The social rate of return of investing in secondary school education is estimated to be 19.0 per cent for males and 17.8 per cent for females. ▶

The value of investing in education can be assessed by calculating the rate of return. A rate of return is the yield on a dollar that has been invested. The use of rates of return to assess the value of investing in education is similar to their use in making decisions about other investment options, such as bonds, stocks, or capital projects. In the case of education, the rate of return can be thought of as the yield on completing secondary school. A quick review of the basic techniques of rate-of-return calculation is found in Exhibit 1.

For the student trying to decide whether to stay in school, the rate of return is the tool to use to make an economically intelligent decision. If the rate of return to graduating is greater than the rate of return that the student can get by following some other course of action, then it makes economic sense for that youth to remain in school. Similarly, from society's point of view, if the rate of return that society receives from funding secondary school education is greater than the rate of return that it could get by funding some other project, then it is beneficial to continue to fund education.

The overall rate of return to society (social rate of return) of investing in secondary school education is estimated to be 19.0 per cent for males and 17.8 per cent for females. The rate of return to the individual student (private rate of return)

is 65.4 per cent for males and 74.4 per cent for females. Both social and private rates are generally *higher* than the rates of return that are commonly cited for alternative investment opportunities. It is common practice to use a social discount rate of return of 7 per cent as a benchmark below which investment in education is not deemed to be wise or profitable. To account for the higher risk premium for individuals, the benchmark chosen for the private rate of return is 12 per cent, reflecting the rate of return in financial markets.

The rates of return discussed above include benefits from both income-related and non-market sources. If the non-market benefits are excluded, the social rate of return for males drops to 10.3 per cent and for females to 8.9 per cent. Similarly, the private rates of return fall to 41.3 per cent for males and to 47.7 per cent for females. Even at these levels, the social and private rates of return for both males and females compare favourably with alternative investment possibilities. The social rates of return are higher than 7 per cent and the private rates of return clearly exceed 12 per cent, indicating that the decision to remain in school until secondary school graduation benefits all parties.

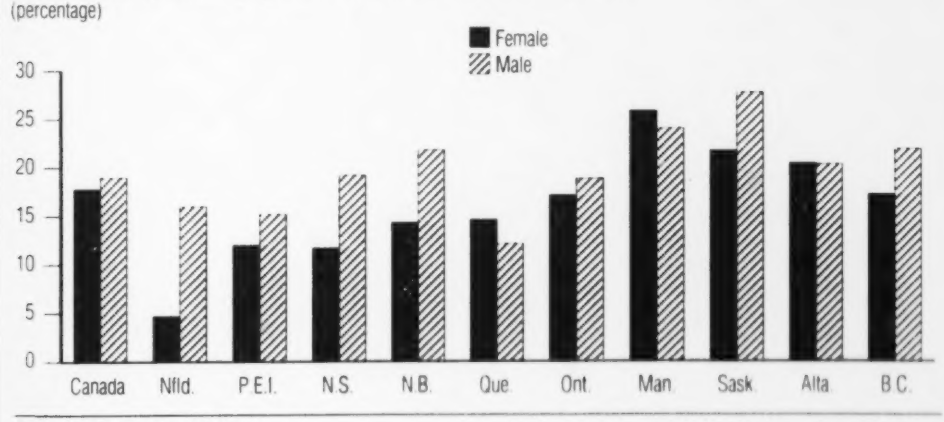
The social and private rates of return for both males and females compare favourably with alternative investment possibilities. ▶

The provincial rates of return shown in Charts 6 and 7 demonstrate that the value of a secondary school education differs among the provinces. The social rate of return ranges from a low of 4.7 per cent in Newfoundland to a high of 27.7 per cent in Saskatchewan. The private rate of return ranges from a low of 18.1 per cent in Newfoundland to a high of 102.7 per cent in Manitoba. The private rates of return are much higher than the social rates, reflecting the fact that the public funding of secondary schooling in Canada requires little or no monetary expenditure on the part of the secondary school student. Because the average public school student does not pay tuition fees and pays little for textbooks and other supplies, the extra income that the student will earn by obtaining a secondary school diploma is virtually cost-free in terms of dollar outlay. In contrast,

Chart 6

Social Rate of Return by Province, Male and Female, 1989

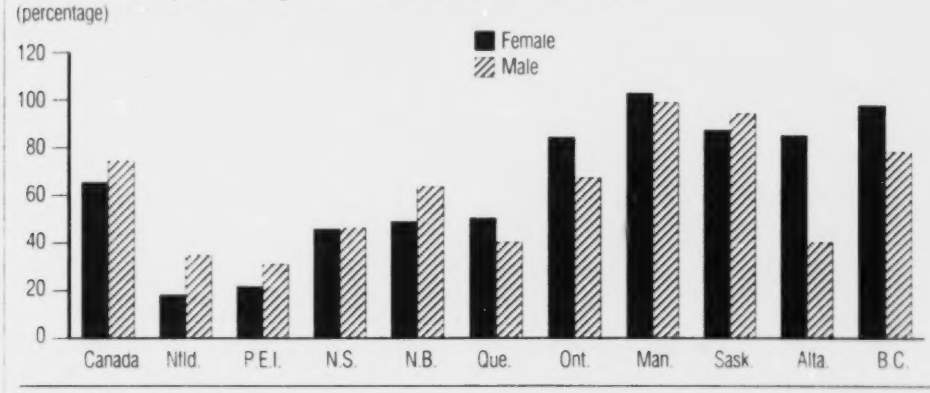
(percentage)



Source: The Conference Board of Canada

Chart 7

Private Rate of Return by Province, Male and Female, 1989



Source: The Conference Board of Canada

Canada as a whole bears a large cost outlay to educate each secondary school student, thereby dampening the return on investment. All provinces clearly exceed the benchmark for the private rate of return, while only Newfoundland does not meet the minimum benchmark for the social rate of return.

It is often difficult to isolate the various factors that create differences among provinces, yet the formulation of policy to deal with the disparity depends largely on identifying where the disparity arose. Differences among provincial rates of return generally reflect two sets of factors: differences in the private or public costs of providing a secondary school education and regional differences in earned income between graduates and non-graduates. For example, the relatively low rates of return for Quebec males result from the facts that per-student school board costs in Quebec are the highest of the 10 provinces and the earnings differential between males with secondary school diplomas and those without is the lowest.

Identifying the reasons for varying school board costs or education-based income differentials is largely beyond the scope of this report.[6] Regarding the latter, however, one explanation sometimes given is related to differences in regional industrial structure and economic performance. If the province is heavily weighted with jobs that do not require a secondary school diploma, a lower value will accrue to the diploma. A study by Employment and Immigration Canada identifies five characteristics of economic activity in low-income/high-unemployment regions: small scale and relative labour intensity; a general lack of corporate agglomeration; a low level of education and skills in the regional labour force; lags in the adoption of new technology; and a high degree of seasonal or cyclical demand.[7]

6 For a brief review of the issue of school board expenditure differentials, see Stephen T. Easton, *Education in Canada: An Analysis of Elementary, Secondary and Vocational Schooling* (Vancouver: The Fraser Institute, 1989): 39–60.

7 Employment and Immigration Canada, *Success in the Works: A Profile of Canada's Emerging Workforce* (Ottawa: 1989): 11.

Lower returns to education in some provinces may simply reflect the particularities of the economic and industrial structure.

Lower returns to education in some provinces may not reflect the value that the population or the market places on education; they may simply reflect the particularities of the economic and industrial structure. The population of a province may believe that secondary school graduation has positive value, yet if the bulk of the industries in that province do not require a secondary school diploma—as is the case in many resource-based industries—the differential in income will be diminished. The returns to education in that province will then largely reflect the non-income benefits, such as reduced crime or improved general health.

There may be other reasons why a province with low returns to secondary school education may wish to continue to fund this level of education. For example, the economies of traditionally resource-based provinces, such as Newfoundland, have been hit hard by recent economic events that have intensified their desire to diversify their economy. As the structure of the economy evolves and the skills required by industry increase, a province such as Newfoundland will need to ensure that it has a workforce with the education levels that allow it to adapt to new technologies, new industrial requirements and increasing global and national competition. Continued support and commitment to education will thus be required from all participants.

Changes in the overall number of graduates at any level of education will have an impact on the earnings potential of that group of students.

The Overeducated Canadian?

During the 1970s, there was a decline in the returns to secondary school education. The issue first attracted wide public attention with the publication in 1976 of *The Overeducated American*, by Richard Freeman.[8] Focusing on post-secondary education, Freeman reported that the average private rate of return for male graduates had fallen in the 1970s compared with the 1960s. Comparable results were reported in Canada by such researchers as Martin Dooley[9] and François Vaillancourt and Irene Henriques.[10] Freeman concluded that, because of the flood of baby-boomers into the labour market, there was an oversupply of college graduates in the United States; in effect, America was "overeducated".

According to David Stager, the decline in returns to higher education in Canada in the 1970s appears to have been a relatively short, cyclical condition rather than the beginning of a long-term trend.[11] He reports that private and social rates of return have increased rather sharply and are approaching the level of the 1960s. He cautions, however, that the recent rise in the rates of return may be due in part to a slower increase in the supply of new university graduates.

Changes in the overall number of graduates at any level of education will have an impact on the earnings potential of that group of students. It would clearly be misleading to claim that if all currently enrolled secondary school students completed secondary school, they would necessarily earn what is presently being earned by graduates. It would be equally misleading, however, to claim that no

8 Richard Freeman. *The Overeducated American* (New York: Academic Press, 1976).

9 Martin D. Dooley. "The Overeducated Canadian? Changes in the Relationship among Earnings, Education and Age for Canadian Men: 1971–81", *Canadian Journal of Economics*, XIX, no. 1 (February 1986): 142–159.

10 François Vaillancourt and Irene Henriques. "The Returns to University Schooling in Canada", *Canadian Public Policy*, XII, 3 (1986): 449–458.

11 David A.A. Stager. *Focus on Fees: Alternative Policies for University Tuition Fees* (Toronto: Council of Ontario Universities, July 1989): 73.

additional value would accrue to society or the individual if all secondary school students graduated from high school. As discussed previously, there are a range of non-income benefits that both society and the student acquire as a result of increased education. Enhanced education also has the potential to improve labour productivity, a key component of economic prosperity for the country.[12]

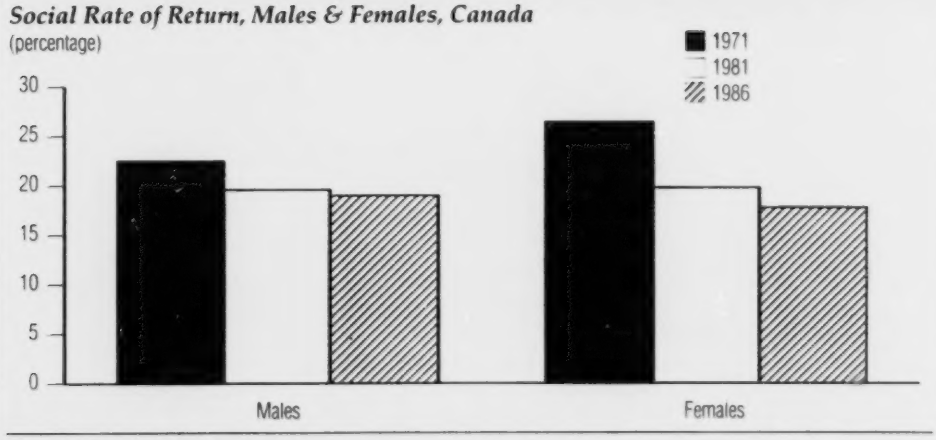
While the social rate of return to secondary schooling fell over the 15 years between the 1971 census and the 1986 census, it remained high and continued to justify an investment in secondary school education for both the individual student and society. The social rate of return for males fell from 22.5 per cent in 1971 to 19.6 per cent in 1981 (see Chart 8). The figures for females are similar, with the social rate dropping from 26.4 per cent to 19.8 per cent over the same 10-year period. From the 1981 census to the 1986 census, the rates of return remained virtually unchanged, with the male rate falling slightly to 19.0 per cent and the female rate slipping to 17.8 per cent.

The fall in the social rate of return to secondary school education in Canada in the 1970s confirms the evidence presented by Freeman that cohort size can influence the returns to education. The concept of the cohort effect is the idea that as more individuals achieve a given level of education, that level becomes relatively less valuable. For example, a high school diploma is a more valuable asset if only 5 per cent of the population have one than if everyone does.

The results of this study suggest that cohort size does have an impact on earnings and thus on the value of education. Isolating the impact of cohort size on earnings demonstrates that there is a

Chart 8

Social Rate of Return, Males & Females, Canada



Source: The Conference Board of Canada

12 Productivity measures the value each employed person contributes to the economy through his or her labour. It is commonly calculated as the value of economic output per worker. Productivity growth rates are often used to indicate, in a general way, a country's ability to compete in world markets.

correlation between the number of graduates and their income levels.[13] Given that the number of secondary school graduates in the Canadian labour force increased significantly over the 1970s, it is not surprising to discover that the relative returns to education fell somewhat.

The decline in both the social monetary returns and the social rates of return to education in the 1970s does not, however, justify a weakening of either private or public support for secondary school education. In fact, these returns stabilized in the 1980s and continue to remain above the benchmark used to evaluate the viability and desirability of an investment by students and society alike in secondary schooling.

Social and private rates of return remain above the benchmark used to evaluate the viability and desirability of an investment by students and society alike in secondary schooling.

For the individual student, the private rates of return were extremely high, and they increased from 1971 to 1986 (see Chart 9). This increase not only reflects changes in the tax system over the 15 years, but also reveals that the cost of remaining in school became relatively lower for the student. The average student spent a relatively smaller amount on books, direct fees and miscellaneous school-related expenditures in 1986 than in 1971. Moreover, an increasing number of students held part-time jobs, thereby shrinking the difference between the earnings of the dropout and the student while the student remained in full-time attendance at school. The amount of income that the student had to forgo in order to remain in school was thus correspondingly less.

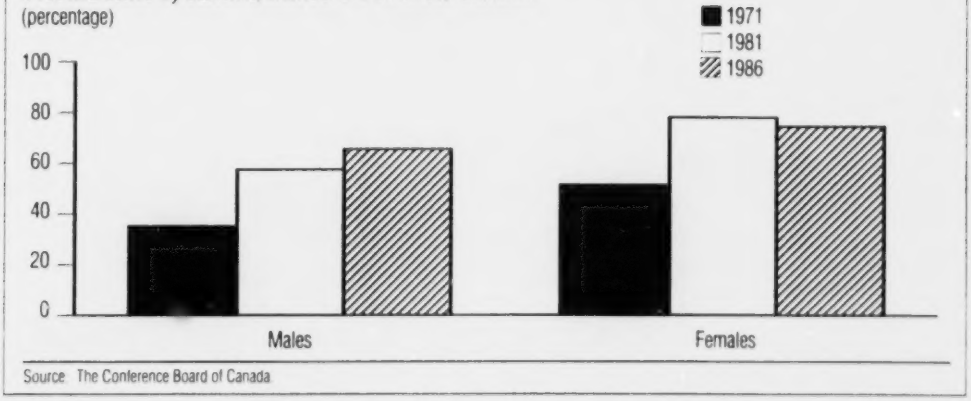
Conclusion

Any initiative that encourages students to complete secondary school can have a major positive impact on the future economic well-being and prosperity of both the individual student and Canada as a whole.

The federal government's 1991 Speech from the Throne proposed certain Canada-wide goals for education. One of

Chart 9

Private Rate of Return, Males & Females, Canada



Source: The Conference Board of Canada

13 The technique used to assess the impact of cohort size involved a regression equation in which the level of education, age, unemployment rates, the time period in which the education was attained, and cohort size were adopted as explanatory variables for the level of income. The cohort variable turned out to be a significant explanatory variable in that, as the size of a particular student cohort increased, the resulting income level for that cohort decreased.

All stakeholders have an interest in working towards reducing the number of secondary school dropouts. ▶

these goals is to ensure that 90 per cent of Canadians attain secondary school diplomas or the equivalent by age 25. If the dropout rate is lowered from its current level to 10 per cent by the year 2000, and if students face labour market conditions similar to those experienced by the 1989 class of secondary school graduates, the present value of the lifetime dropout cost to Canadian society over the 1989 to 2000 period can be cut by 40 per cent—from $65 billion to $39 billion, resulting in a saving of $26 billion.[14]

A study by James Catterall notes that a puzzle emerges when we compare the high costs of dropping out with the scale of current commitment to enhance retention.[15] He suggests that one reason for the lack of full participation of stakeholders may be that they underestimate the true magnitude of the problem. Our objective in this report is to raise awareness of the significant dropout costs *currently* carried by society and individual students in an effort to motivate all stakeholders to work towards reducing the number of secondary school dropouts. Our results confirm that all stakeholders have an interest in promoting and participating in such an initiative. Given the kind of future that is anticipated for Canada, one in which education will play an increasingly important role in emerging technologies, international competitiveness and economic productivity, action on the secondary school dropout problem is imperative.

14 This calculation assumes that the income differential between graduates and dropouts remains constant in the face of a falling dropout rate.

15 James Catterall. "Dropping Out: The Cost to Society." *Education* (UCLA Graduate School of Education Magazine) 4, no. 1 (Spring 1985).

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The Conference Board of Canada
255 Smyth Road
Ottawa, Ontario K1H 8M7
Telephone (613) 526-3280
Fax (613) 526-4857

The Conference Board, Inc.
845 Third Avenue
New York, N.Y. 10022 U.S.A.
Telephone (212) 759-0900
Fax (212) 980-7014

The Conference Board Europe
Avenue Louise 207-Bte 5
B-1050 Brussels, Belgium
Telephone (02) 640 62 40
Fax (02) 640 67 16

Design Bill Mather
Editing Laurie Boles
Layout Maria Marello
Computer Services Jacques Tisseur
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"Information for Sound Decisions"

Dropping Out: The Cost to Canada

SYNOPSIS

May 1992

The $4 Billion Cost to Canada

The costs of dropping out of high school are discernible and significant. Canadian society will lose more than $4 billion over the working lifetime of the nearly 137,000 students who dropped out in 1989.[1] Each individual male dropout will lose nearly $129,000 over his working lifetime, while each female dropout will give up $107,000 over her working lifetime. The rate of return to society for investing in high school education is 19.0 per cent for males and 17.8 per cent for females. The rate of return for the individual student is even higher. The individual male student receives a rate of return of 65.4 per cent by graduating from high school, while the female student earns a 74.4 per cent return.

Canadians are increasingly aware that education, because of its impact on our social well-being and economic prosperity, is one of the most significant public issues facing Canada in the 1990s. Problems facing the educational system threaten to reduce the national standard of living, heighten demands on social safety nets, and increase the economic burden on individual and corporate taxpayers. One of the most important of these problems is a high school dropout rate that stands at 34 per cent—meaning that one in three Canadian high school students fails to graduate. Equally disturbing is the fact that although the dropout rate has fluctuated over the last 10 years from a high of 38 per cent to a low of 28 per cent, the dropout rate has been rising again in recent years.

The $4 billion cost to Canada consists of lost lifetime earnings and tax revenues as well as the additional expenditures society has to make to address related social problems. This economic cost of $4 billion becomes even more staggering when we realize that this amount represents the lifetime loss to society of *only one school year of students who drop out*.

This estimate is based on an approach which compares the benefits that the individual student and society receive when students graduate from high school to the social and individual costs of providing that level of education. The individual student and society invest in education in the hopes of gaining a return on that investment in the future. The payoff for students and society can take two forms—market and non-market related.

The average dropout earns less than the average graduate. This loss is a cost to society because it represents lower economic production as well as lower government taxes. Students who do not complete high school are less productive because of a shortage of learned skills. In turn, they contribute less to society in terms of productive capacity and economic output. This reduced national income adds to the social burden by generating lower tax collections for all levels of government. The tie between schooling and earnings is confirmed by census data, which show that both male and female high school dropouts earn less over their lifetime than graduates.

The strong relationship between dropping out and the cost to both society and the individual

[1] The $4 billion figure is the present value of the working lifetime cost of dropping out for the group of students who did not complete their secondary school education in 1989, the most current year of data on national and provincial dropout rates.

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student in the form of lost income and productive capacity has been well established. Beyond these income-related consequences, the high school graduate and society can expect to gain from a host of non-market benefits. These benefits include factors such as lower costs for health services, increased cultural participation, increased opportunity for training and mobility, higher yields on personal investments, lower expenditures on crime prevention and detection, and lower expenditures to administer welfare and unemployment programs.

Against these benefits must be placed the costs of providing that level of education. The cost to individual students includes the cost of books, tuition and miscellaneous fees, as well as the labour income given up while attending school. The cost to society includes the direct expenditures for teachers' salaries, equipment and supplies, as well as the value of the productive output that students would be generating if they were employed full time instead of remaining in school.

Students Also Lose by Dropping Out

Individual students are also harmed by their decision to drop out. Each individual male dropout loses nearly $129,000 over his working lifetime, while the female dropout forfeits $107,000 over her working lifetime. These figures include both income and non-market factors.

In lost income alone, individual dropouts forfeit approximately $70,000 each over their working lifetime—male dropouts each earn $76,000 less over their lifetime, while female dropouts will each give up nearly $63,000. The fact that women forfeit less income than men by dropping out of high school reflects the fact that women continue to earn less than their male counterparts, even when the educational levels of the two groups are the same.

High school dropouts also lose out on a host of factors that are much more difficult to assess since most lie outside of the market system, yet are nevertheless significant. Some of the factors identified by researchers include a decreased level of personal health, the lower educational attainment of offspring, a lower yield on personal investments, less enjoyment of cultural activities, and lower social status and fringe benefits connected to their subsequent employment.

The decision to remain in school is an important one for the future of Canada as well as for the individual student. At present, high school dropouts experience higher unemployment rates than their classmates who graduate, and the workers who are most likely to be laid off in times of economic recession are those in occupations where job growth is lowest—precisely those jobs that require lower skills. The importance of education for the individual student will not diminish in the future. Of all the jobs to be created between 1990 and the year 2000, Employment and Immigration Canada reports that nearly 65 per cent will require a minimum of 12 years of education and training. These projected requirements show a marked contrast with the skills required for existing jobs. Currently, only 53 per cent require at least 12 years of education.

Education Is an Investment

The value of investing in education can be assessed by calculating the rate of return. A rate of return is the yield on a dollar that has been invested. The use of rates of return to assess the value of education is similar to the use of rates of return to make decisions about other investment options, such as bonds or stocks. In the case of education, the rate of return can be thought of as the yield on completing high school.

As an investment vehicle, *education has a higher rate of return than almost any alternative* investment opportunity. The rate of return to society for investing in high school education is 19.0 per cent for males and 17.8 per cent for females. The rate of return for the individual student is even higher. The individual male student receives a rate of return of 65.4 per cent by graduating from high school, while the female student earns a 74.4 per cent return.

Rates of return are frequently used to compare alternative investment options. For the student trying to decide whether staying in school is a good decision, the rate of return is the tool for making an economically intelligent decision. If the rate of return on graduating from high school is greater than the rate of return that the student can get from following some other course of action, then it makes economic sense for that youth to remain in school. Similarly, from society's point of view, if the rate of return from funding high school education is greater than the rate of return that it can get by funding some alternative project, then it is beneficial to continue to fund that level of education.

All Stakeholders Are Affected

The federal government's 1991 Speech from the Throne proposed certain Canada-wide goals for education. One of these goals was to ensure that 90 per cent of Canadians attain secondary school diplomas or the equivalent by age 25. If the dropout rate is lowered from current levels to 10 per cent by the year 2000 and if students face labour

market conditions similar to those experienced by the 1989 class of secondary school graduates, the present value of the lifetime dropout cost to Canadian society over the 1989 to 2000 period could be cut by 40 per cent—from $65 billion to $39 billion, a savings of $26 billion.[2]

Any initiative that will encourage students to complete high school can have a major positive impact on the future economic well-being of both individual students and Canada. All educational stakeholders—business, government, educators, labour, parents and youths—have an interest in promoting and participating in any such initiative. Given the kind of future that is anticipated for Canada, one in which education will play an increasingly important role in emerging technologies, international competitiveness and economic productivity, action on the high school dropout problem is imperative.

2 This calculation assumes that the income differential between graduates and dropouts remains constant in the face of the falling dropout rate.

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This report was prepared by Brenda Lafleur, Senior Research Associate, under the direction of Marie Burrows, Director, Custom Economic Services; Florence M. Campbell, Vice-President and Director, National Business and Education Centre; and James G. Frank, Vice-President and Chief Economist, Economic Forecasting, Analysis and Product Development. The Conference Board is grateful for the sponsorship received for this research from the Mobilization Component of the national Stay-in-School initiative delivered under the auspices of the Minister of State for Youth by Employment and Immigration Canada.

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Ottawa, Ontario K1H 8M7
Telephone: (613) 526-3280
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